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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/573,789	03/28/2006	Takao Takiguchi	03500.103819.	8002

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EXAMINER

RAO, SHRINIVAS H

ART UNIT	PAPER NUMBER
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2814

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/573,789	Applicant(s) TAKIGUCHI ET AL.	
	Examiner STEVEN H. RAO	Art Unit 2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 June 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 to 23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1 to 23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>03/28/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

Acknowledgement is made of papers filed claiming priority from PCT/JP2004/017643 which itself claims priority from JP 2003-302090 filed on 21/ November/ 2003 and JP-2004-325838 filed on 10/November/ 2004, which papers have been made of record in the file.

Information Disclosure Statement

The only IDS filed to date namely that of March /28 / 2006 has been considered and the initialed copy of PTO-1449 made of record.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 to 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roietman et al. (U.S. patent No. 6,803,097, herein after Roietman) and further in view of Ito et al. (U.S. patent No. 5,276,750 herein after Ito).

With respect to claim 1 Roietman describes an organic light-emitting device comprising an organic layer of a one or more-layered structure comprising at least one compound (RoietmanI col.1 lines 39-41) .

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Roietman does not specifically describe a phosphorescence lifetime of 880 ms or more

However Ito in fig. 37 describe a phosphorescence lifetime of 880 ms or more at 77K

to provide a means for optimum amount of light to be used by the apparatus.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to include Ito's phosphorescence with stated lifetime in Roietman's device the motivation for the substitution is to a means for optimum amount of light to be used by the apparatus (Ito col. 2 lines 8 to 20).

With respect to claim 2 and 6 Roietman describes the organic light-emitting device according to claim i, wherein the organic layer comprises at least one compound having a phosphorescence lifetime i0 of 1100 ms or more. (Ito fig. 37)

With respect to claim 3 Roietman describes the organic light-emitting device according to claim 1 or 2, wherein the compound is contained in a light-emitting layer. (Roietman col. 1 lines 30-35).

With respect to claims 4 and 5 Roietman describes the organic light-emitting device according to claim 3, wherein the light-emitting layer comprises at least one host material and at lest one light-emitting material, wherein the light- emitting material is a metal coordination compound (cl.7) and iridium coordination compound. (Roietman col.3 lines 40-65).

1. Claims 9 -13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roietman and Ito as applied to claims 1 etc. above, and further in view of Japan 2003-268362 (also cited by Applicants' in their IDS)..

With respect to claim 9 Roietman and Ito describe the organic light-emitting device according to any one of claims 1 to 6.

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Roeitman and ITO do not specifically mention its compound to be a molecule, at least one partial structure comprising an unsubstituted or substituted indole I0 ring and at least one partial structure comprising an unsubstituted or substituted carbazole ring.

However, Japan 2003-268362 describes in its abstract, etc, compound to be a molecule, at least one partial structure comprising an unsubstituted or substituted indole I0 ring and at least one partial structure comprising an unsubstituted or substituted carbazole ring to solve problems of light emitting state and provide better characteristics of the device produced.

Therefore it would have been obvious to one of ordinary skill in the art at the of the invention to include Japan 2003-268362's molecule, at least one partial structure comprising an unsubstituted or substituted indole I0 ring and at least one partial structure comprising an unsubstituted or substituted carbazole ring in Roietman and Ito's device, the motivation for the substitution is to solve problems of light emitting state and provide better characteristics of the device produced.

With respect to claim 10. The organic light-emitting device according to claim 9, wherein the partial structure comprising the unsubstituted or substituted indole ring is represented by the following general formula (1), and the partial structure comprising the unsubstituted or substituted carbazole ring is represented by the following general formula (2):

R8

RI R2 R7 I.

R6 4 R₁ R12

R13

20

wherein AI and A2 independently represents a single bond, an unsubstituted or substituted arylene group, or an unsubstituted or substituted divalent heterocyclic group; and RI, R2, R3, R4, Rs, R6, RT, Rs, Rg, R10, RI~, R12, R~, and R14 are independently selected from an hydrogen atom, a halogen atom, a linear or branched alkyl group having 1-20 carbon atoms (wherein one methylene group or two or more non-adjacent methylene groups of the alkyl group may be replaced by -O-, -S-, -CO-, -CO-O-, -O-CO-, -CH=CH-, or -C~C-, or one or more methylene groups I0 may be replaced by an unsubstituted or substituted arylene group or an unsubstituted or substituted divalent

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heterocyclic group, and a hydrogen atom in the alkyl group may be replaced by a fluorine atom), an unsubstituted or substituted aryl group, and an unsubstituted or substituted heterocyclic group, and adjacent ones of R3, R4, Rs, R6, RT, Rs, Rg, R10, R11, R12, R~3, and R14 may be bonded together to form a ring. (Japan 2003-268362 , page 3).

With respect to claim 11 and 13 to 17 Roietman describes the organic light-emitting device according to claim i0, wherein the compound is represented by the following general formula (3): $R^4 / R1A2 + X - / - - A C N . \sim R2$ wherein m and n are independently an integer of 1-5, and the sum of m and n is an integer of 2-6, and X is an unsubstituted or substituted, m+n valent organic group. (Japan 2003-268362, page 4).

With respect to claim 12 , 18 and 19 Roietman describes the organic light-emitting device according to claim 11, wherein the compound is represented by the following general formula (4): $2 (4) X x2X3$ wherein X1 represents a nitrogen atom or C-R1s, X2 represents a nitrogen atom or C-R16, X3 represents a i0 nitrogen atom or C-R~, X4 represents a nitrogen atom or C-R~8, Xs represents a nitrogen atom or C-R~9, X6 represents a nitrogen atom or C-R20, and the number of nitrogen atoms in X~, X2, X~, X4, Xs, and X6 is 4 or less; R1s, R16, R17, R~8, R~9, and R20 is independently selected from an hydrogen atom, a halogen atom, a linear or branched alkyl group having 1-20 carbon atoms (wherein one methylene group or two or more non-adjacent methylene groups of the alkyl group may be replaced by -O-, -S-, -CO-, -CO-O-, -O-CO-, -CH=CH-, or -C~C-, or one or more methylene groups may be replaced by an unsubstituted or substituted arylene group or an unsubstituted or substituted divalent heterocyclic group, and a hydrogen atom in the alkyl group may be replaced by a fluorine atom), an unsubstituted or substituted aryl group, and an unsubstituted or substituted heterocyclic group, with the proviso that at least one of R15, R16, R17, R~8, R19, and R20 is a partial structure comprising an indole ring represented by the general formula (I) and at least another of R~s, R~6, R~7, R~8, R~9, and R20 is a partial structure comprising a carbazole ring represented by the general formula (2).

(Japan 2003-268362 , col.8).

With respect to claims 21 to 23 Roietman describes the organic light-emitting device according to any one of claims 3 to 8, wherein the light-emitting layer comprises a plurality of phosphorescent materials which has the organic layer sandwiched by opposing two electrodes and emits light by application of a voltage between the

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electrodes and means for supplying an electric signal to the organic light-emitting device. (Japan 2003-268362 , fig.4 , page 10).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEVEN H. RAO whose telephone number is (571)272-1718. The examiner can normally be reached on 8.30-5.30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on 571-272-1714. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Steven H Rao/
Examiner, Art Unit 2814

/Howard Weiss/
Primary Examiner, Art Unit 2814